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| 10/560,881   | 12/13/2005  | Frank Reiners        | REINERS ET AL.-2 (PCT)           | 1777             |
| 25889  | 7590        | 02/13/2009           |                                  |                  |
| COLLARD & ROE, P.C.<br>1077 NORTHERN BOULEVARD<br>ROSLYN, NY 11576 |             |                      | EXAMINER<br>JONES, CHRISTOPHER P |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/560,881

**Applicant(s)**

REINERS ET AL.

**Examiner**

CHRISTOPHER P. JONES

**Art Unit**

4132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/08/2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-19 is/are pending in the application.  
4a) Of the above claim(s) 9-12 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 13-19 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 13 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 16 is objected to because of the following informalities: the phrases "on the one hand" and "on the other hand" are too informal. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 14 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Regarding claim 14, the phrase "wherein the phase change temperatures of the different phase change materials (7', 7'') increase in the direction of flow through the adsorption filter" is indefinite. The specification indicates that there are two directions of flow through the adsorption filter (page 7, lines 17-22). It is therefore not clear which direction "the direction of flow" is referring to. Furthermore, it is not clear whether each phase change material has different phase change temperatures increasing in the direction of flow through the adsorption filter, or whether each phase change material has only one phase change temperature, but the various phase change materials are arranged such that the phase change temperatures increase in the direction of flow.

5. Regarding claim 18, the phrase "wherein the filter material has a volume amount of approximately 5% to 15%" is indefinite. It is unclear whether "volume amount" is referring to the volume of the activated carbon, the volume of the wax, or the volume of the activated carbon plus the wax.

***Answers to Applicant's Arguments***

6. The 35 U.S.C. §112 second paragraph rejections of claims 9-12 of the office action mailed 09/10/2008 have been withdrawn due to Applicant's amendments.
7. The 35 U.S.C. §102 rejections of anticipation by Pittel of the office action mailed 10/28/2008 have been withdrawn due to Applicant's amendments.
8. The 35 U.S.C. §103 rejections over Pittel in view of Seki, over Pittel in view of Uchino, over Pittel in view of Seki in further view of Uchino, of the office action mailed 10/28/2008 have been withdrawn due to Applicant's amendments.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Pittel* USPN 5,861,050, in view of *Applicant's admission*, in further view of *Yamafuji* USPA 2001/0020418 A1.

12. Regarding claim 13, *Pittel* discloses a filter for fuel vapors (column 1, lines 55-6) to be used for a tank container of an internal combustion engine of a motor vehicle (column 1, lines 11-13), where the filter is regenerable by desorptive countercurrent backflushing (column 6, lines 26-31), the adsorptive/desorptive filter material has heat-storing substances comprised of phase change material (column 1, lines 61-5) wherein different phase change materials with individual phase change temperatures are provided (column 5, lines 26-30), which are arranged one after the other in the direction of flow through the adsorption filter. By using two different phase change materials with different phase change limits, the phase change limits will necessarily increase either during the adsorption function, when downstream is in the direction of object 17 of figure 1, or during the desorption function, when downstream is in the opposite direction of object 17 of figure 1. Therefore the different phase change materials with individual phase change temperatures are necessarily arranged one after the other in the direction of flow through the adsorption filter. *Pittel* discloses that the phase change materials are arranged distributed in the form of small units (column 3, lines 45-51), within the reactive filter material (column 1, lines 61-5).

13. In the alternative, if *Pittel* did not explicitly teach the phase change material being in the form of small units, Applicant discloses on pages 1 and 2 of the Specification that it is known that granular phase change material may be distributed throughout a foam to compensate for and/or suppress temperature fluctuations caused by external influences. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the filter for fuel vapors, of *Pittel*, to include phase change materials in the form of small granular units in order to increase heat transfer efficiency between the adsorbent and the phase change material.

14. *Pittel* does not explicitly disclose that the phase change material is wax.

15. Applicant discloses on page 1 of the specification that wax is a known phase change material. The selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination. MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the filter for fuel vapors, of *Pittel*, so that the phase change material is wax, because wax is suitable for its intended purpose as a phase change material, and wax is cheap and readily available.

16. *Pittel* in view of *Applicant's admission* does not explicitly disclose that the filter material is activated carbon.

17. *Yamafuji* discloses an adsorption filter for fuel vapors (see *Yamafuji* at Abstract) where the adsorbent material is activated charcoal/carbon (see *Yamafuji* paragraph 15). The selection of a known material based on its suitability for its intended use supports a *prima facie* obviousness determination. MPEP 2144.07. Therefore, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to modify the filter for fuel vapors, of *Pittel* in view of *Applicant's admission*, so that the adsorbent is activated carbon, because activated carbon is suitable and effective for its intended use as a fuel vapor adsorbent.

18. *Pittel* in view of *Applicant's admission* does not explicitly disclose that the pellets contain additional filler material having a good conductivity.

19. *Yamafuji* discloses an adsorption filter for fuel vapors (see *Yamafuji* at Abstract) with adsorption pellets containing heat-storing particles having high thermal conductivity in order to increase the specific heat of the adsorbent material as a whole (see *Yamafuji* paragraph 7).

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the adsorption filter for fuel vapors, of *Pittel* in view of *Applicant's admission*, with the adsorption filter for fuel vapors with adsorption pellets containing heat-storing particles having high thermal conductivity, of *Yamafuji*, for the purpose of increasing the specific heat of the adsorbent material as a whole. One of ordinary skill in the art would have been motivated to increase the specific heat of the adsorbent material as a whole for the purpose of increasing the effectiveness of the adsorbent.

21. Regarding claim 14, *Pittel* teaches using different materials with different phase change limits (column 5, lines 29-30). By using two different phase change materials with different phase change limits, the phase change limits will necessarily increase either during the adsorption function, when downstream is in the direction of object 17 of

figure 1, or during the desorption function, when downstream is in the opposite direction of object 17 of figure 1.

22. Regarding claim 15, *Yamafuji* discloses that the adsorption filter comprises two interconnected chambers (see *Yamafuji* figure 2), whereby the 1<sup>st</sup> chamber (see *Yamafuji* figure 2, object 12) is on the fuel vapor end, while the 2<sup>nd</sup> chamber borders the fresh air end (see *Yamafuji* figure 1, object 13A), so that the 1<sup>st</sup> chamber is upstream of the 2<sup>nd</sup> chamber with respect to the direction of flow through the adsorption filter (see *Yamafuji* paragraph 32). *Yamafuji* discloses that this second chamber can be used to improve the desorbence of the adsorbent material near the fresh air end (see *Yamafuji* paragraph 51).

23. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the adsorption filter, of *Pittel* in view of *Applicant's admission*, with the two interconnected chambers, whereby the 1<sup>st</sup> chamber is on the fuel vapor end, while the 2<sup>nd</sup> chamber borders the fresh air end, so that the 1<sup>st</sup> chamber is upstream of the 2<sup>nd</sup> chamber with respect to the direction of flow through the adsorption filter, Of *Yamafuji*, for the purpose of improving the desorbence of the adsorbent material near the fresh air end.

24. Furthermore, it would have been obvious to one of ordinary skill in the art to include the phase change material in both chambers for the purpose of removing heat generated during adsorption of fuel vapor (see *Pittel* column 1, lines 54-67, and column 2, lines 1-5) to increase the effectiveness of the adsorbent contained in both chambers.



25. The examiner notes that the phrases "phase change material (7')" and "phase change material (7'')", when given their broadest reasonable interpretation, do not necessarily indicate that phase change material (7') and phase change material (7'') are different substances with different phase change temperatures, rather, phase change material (7') and phase change material (7'') could refer to phase change materials of the same substance with the same phase change temperature, but located in different areas. See MPEP 2111.

26. Regarding claim 16, *Pittel* teaches that the phase change material has various phase change (conversion) temperatures that are different with regard to temperature through the filter (column 5, lines 26-30), thereby including a phase change material having a relatively high phase change temperature and a phase change material having a relatively low phase change temperature. *Pittel* teaches that both are present at the same time in the end area of the filter on the fresh air end (column 5, lines 26-30; and figure 5, object 32).

27. Claim 17, when given its broadest reasonable interpretation, consistent with MPEP 2111, is open-ended, and therefore does not limit chamber (1) as having exclusively phase change material with a phase change temperature of approximately 30°C, nor does it limit chamber (2) as having exclusively phase change material with a phase change temperature of approximately 60°C to 70°C. In other words, when claim 17 is given its broadest reasonable interpretation, each chamber could possess both phase change material (7') as well as phase change material (7'').

28. Regarding claim 17, *Pittel* discloses the use of two phase change materials, together, exhibiting differing transition temperatures from one another (see *Pittel* column 5, lines 26-30). As discussed in paragraphs 23 and 24 of this office action, it would have been obvious to one of ordinary skill in the art to include phase change material in both chambers. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include two different phase change materials, together, exhibiting differing transition temperatures from one another (see *Pittel* column 5, lines 29-30), in each chamber, for the purpose of controlling the specific heat of the adsorbent material thereby optimizing the effectiveness of the adsorbent. Therefore, the adsorption filter of *Pittel*, in view of *Applicant's admission*, in further view of *Yamafuji* would have two chambers, each with two phase change materials with different phase change temperatures. Therefore, chamber (1) would have a phase change material with a relatively low phase change temperature (as well as a phase change material with a relatively high phase change temperature), and chamber (2) would have a phase change material with a relatively high phase change temperature (as well as a phase change material with a relatively low phase change temperature). Absent a proper showing of criticality or unexpected results, the exact transition temperatures of the phase change materials is considered to be a general condition that would have been routinely optimized by one having ordinary skill in the art in order to optimize the specific heat of the adsorbent material thereby optimizing the effectiveness of the adsorbent.

MPEP 2144.05.

29. Regarding claim 18, *Yamafuji* does not explicitly disclose that the filler material has a volume amount of approximately 5% to 15%, nevertheless, absent a proper showing of criticality or unexpected results, the volume % of the filler material is considered to be a general condition that would have been routinely optimized by one having ordinary skill in the art in order to optimize the specific heat of the adsorbent material thereby optimizing the effectiveness of the adsorbent. MPEP 2144.05.

30. Regarding claim 19, *Pittel*, in view of *Applicant's admission*, in further view of *Yamafuji* does not explicitly disclose that the phase change material is approximately 20% with respect to activated carbon in both chambers. Nevertheless, absent a proper showing of criticality or unexpected results, the approximate volume % of the phase change material with respect to the activated carbon is considered to be a general condition that would have been routinely optimized by one having ordinary skill in the art in order to provide optimal heat storage of heat generated during adsorption of fuel vapor. MPEP 2144.05.

### ***Conclusion***

31. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

32. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER P. JONES whose telephone number is (571)270-7383. The examiner can normally be reached on Monday - Thursday, 8:00 AM - 5:00 PM.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571)272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

35. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 1797

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